

Notice of Allowability

Application No.

09/997,733

Examiner

Venkatesh Haliyur

Applicant(s)

PROCTOR, JAMES A.

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/22/2007.
2. ☒ The allowed claim(s) is/are 1-7, 9-12, 14-36, 38-47, 49-56, 58 and 59.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment to claims 42,48,51,57 was given in a telephone interview with the examiner by applicant's representative Joseph P. Gushue (Reg. No. 59,819) on 11/09/2007.
3. The application has been amended as follows:

a) In the claims: Claims 42 and 51 are amended to recite as follows:

42. A subscriber unit comprising:

a wireless transceiver configured to provide wireless communications of digital signals over a digital communications path in a wireless CDMA system;

and

a bandwidth manager coupled to the wireless transceiver and configured to receive over the digital communications path a power control

bit from a remote wireless transceiver, and to compute a power level corresponding to the power control bit for a gated idle mode signal to be transmitted by the wireless transceiver;

the wireless transceiver configured to transmit the gated idle mode signal to the remote wireless transceiver during an idle mode connection wherein the wireless transceiver is powered on but not actively sending data so that power control is maintained at the computed power level;

wherein the power control bit is received two time slots after the corresponding gated idle mode signal.

51. A code division multiple access (CDMA) user device comprising:

a wireless transceiver configured to provide wireless communications of digital signals over a digital communications path in a wireless CDMA system, including transmission of a synchronization signal to establish a communications session with a CDMA base station; and

a bandwidth manager coupled to said wireless transceiver and configured to receive over the digital communications path a power control bit from the CDMA base station, and compute a power level corresponding to the power control bit, and utilize allocated subchannels on an as needed basis when the wireless transceiver is to transmit data;

the wireless transceiver configured to transmit a gated idle mode signal to the CDMA base station during an idle mode connection wherein the wireless transceiver is powered on but not actively sending data so that power control is maintained at the computed power level;

wherein the power control bit is received two time slots after the corresponding gated idle mode signal.

b) In the claims: Claims 48 and 57 are canceled:

48. (Canceled).

57. (Canceled).

Allowable Subject Matter

4. The following is an examiner's statement of reasons for allowance:

Claims 1-7,9-12,14-36,38-47,49-56,58-59 are allowed over prior art.

The prior art of record fails to teach and render obvious the limitations as in the independent claims 1, 18, 30, 42, 51 and dependent claims for system and method for controlling signal strength over a reverse link of a CDMA wireless communication system.

The existing CDMA system requires certain operations before a channel can be used. Both access and traffic channels are modulated by so-called long

code pseudonoise (PN) sequences; therefore, in order for the receiver to work properly it must first be synchronized with the transmitter. The setting up and tearing down of channels therefore requires overhead to perform such synchronization.

This overhead results in a noticeable delay to the user of the subscriber unit. An attractive method of increasing data rate for a given user is the sharing of channels in both the forward and reverse link direction. This is an attractive option, especially with the ease of obtaining multiple access with CDMA; additional users can be supported by simply adding additional codes for the forward link, or code phases in the reverse link for an IS-95 system. Ideally, this subchannel overhead would be minimized so that when additional subchannels need to be allocated to a connection, they are available as rapidly as possible.

To maintain synchronization, it is therefore advantageous to provide the sub-channels in such a way that the lowest possible speed connection is provided on a reverse link while at the same time maintaining efficient and fast ramp-up of additional code phase channels on demand. This in turn would maximize the number of available connections while minimizing the impact on the overall system capacity.

The invention in the instant application overcomes the above-identified problems as well as other shortcomings and deficiencies of existing technologies by providing a method

The present invention is a service option overlay for an IS-95-1like CDMA wireless communication system which accomplishes the above requirements. In particular, a number of subchannels for a forward link are defined within a single CDMA radio channel bandwidth, such as by assigning different orthogonal codes to each sub-channel. Multiple subchannels are defined on the reverse link by assigning different code phases of a given long pseudonoise (PN) code to each subchannel. The instantaneous bandwidth needs of each on-line subscriber unit are then met by dynamically allocating additional capacity on an as needed basis for each network layer connection.

More recently, the cdma-2000 system provides a variable spreading factor to increase data rate rather than using additional long codes. Only a single long code is used, and different data rate are obtained by changing the chips per data bit or the length of the orthogonal code. Further, additional orthogonal codes within the code phases are employed.

More particularly, the present invention efficiently provides a relatively large number of virtual physical connections between the subscriber units and the base stations on the reverse link for extended idle periods such as when computers connected to the subscriber units are powered on, but not presently actively sending or receiving data. These maintenance subchannels permit the base station and the subscriber units to remain in phase and time synchronism.

The power levels over the subchannels is regulated to minimize interference. This in turn allows fast acquisition of additional capacity. The

additional capacity can be obtained in several ways. Additional code phases, or long codes, may be employed. Further, additional orthogonal codes within the same code phase may be added, as described above. Finally, the spreading factor of the codes may be varied.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Venkatesh Haliyur whose telephone number is 571-272-8616. The examiner can normally be reached on Monday thru Friday 8:30AM to 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Patent Examiner

11/09/07

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SUPERVISORY PATENT EXAMINER

Edan Orgad